admitted that the cytoplasm (the protoplasm of the cell body surrounding the nucleus) also has its role to play in development, and indeed in the transmission of qualities from parent to offspring. But let us, as do most of the geneticists, ignore for the present argument that complication. The process of development must be, in so far as it is determined by the genes, a product of the interactions between the genes (we are told that many adult features are the products of the co-operations of many genes) and between them and their environment; and their environment is the other parts of the cell (including the nuclear reticulum and wall and the cyto-plasm), which is in turn subject to various influences from the environment of the cells, i. e., other cells and fluids of the body together with physical and chemical influences from outside the body.

Now, one common way of speaking of the egg-cell assumes that it is merely, as it were, a bag of fluid con-taining the genes in suspension or floating loose in it. But, if the mechanical theory of heredity and development be true, such a description of the egg-cell cannot possibly be true; rather the play of the genes upon one another and their subjection to the various environmental in-fluences must be largely a function of the positions of the genes relative to one another and to other parts of the cell. This truth is somewhat vaguely recognized by geneticists ; and such recognition is no doubt the ground of the great importance they attach to the ' mapping ' of

the chromosomes. If the order of succession of the genes within the several chromosomes were constant for all eggs of the species, and if the chromosomes were arranged and fixed in precisely the same positions in all eggs of the same species (if, for example, there were in the egg of